

ANDREYEV, V.N.; VIL'NER, D.G.

Use of old horizontal control materials. Geod. i kart. no. 3:50-51  
Mr '61. (MIRA 14:4)

(Aerial photogrammetry)

AUTHOR: Vil'ner, D. G., Engineer of the  
Sverdlovsk AGP

SSV/6-58-9-15/26

TITLE: On the Problem of the Revision of Maps (K voprosu ob  
obnovlenii kart)

PERIODICAL: Geodeziya i kartografiya, 1958, Nr 9, pp 69 - 70 (USSR)

ABSTRACT: This is a letter to the editor. The following rules  
are laid down for the revision of maps: 1) Maps are  
to be reprinted in smaller editions, but using systematic  
methods of compilation. 2) The information required  
for the revision of maps must be made available by all  
institutions and authorities to the work of which  
alterations of geographical features are due. 3) On  
the basis of this information a diary is to be kept.  
4) New flights will considerably reduce the amount of  
revision work to be done. 5) It will be expedient either  
to establish special departments in the Aerial Surveying  
Authorities, which are closely associated with the  
Gosgeonadzor (State Surveying Inspection) or to transfer  
the functions of the latter institution to the Aerial

Card 1/2

VIL'NER, D.Ye., inzh.

Automatic interlocking of autoclaves. Bezop. truda v prom. 3  
no.11:32-34 N '59. (MIRA 13:3)  
(Autoclaves--Safety appliances)

GUSEV, V.F.; STUPNIKOV, A.A.; BACHMURIN, A.F.; MOTRICH, T.A.; VIL'NER, E.A.

Response to our opponents. Veterinarika 41 no.12:70-72 D '64.  
(MIRA 18:9)

1. Leningradskiy nauchno-issledovatel'skiy veterinarnyy institut.

( ... ..  
... ..

... ..  
... .. (MIRA 18:1)

1. Ieningraskiy nauchno-issledovatel'skiy veterinarnyy institut.

GUSEV, V. F., STUPNIKOV, A. A., BASHMURIN, A. F., MOTRICH, T. A. and VIL'NER, E. A.  
(Leningrad Scientific Research Veterinary Institute)

"Concerning the problem of toxicity of dithiophos"

Veterinariya, vol. 39, no. 7, July 1962 pp. 84

VIL'NER, (S)

25(5)

PHASE I BOOK EXPLOITATION

SOV/2100

Musyakov, Leonid Abramovich, Girsh Solomonovich Vil'ner, and Anatoliy Vasil'yevich Yastrebov

Avtomatizatsiya kak sredstvo ozdorovleniya usloviy truda (Improved Working Conditions Through Automation) [Moscow] Profizdat, 1958. 71 p. 5,000 copies printed.

Ed.: I.S. Denisova; Tech. Ed.: A.A. Golichenkova.

**PURPOSE:** This booklet is intended for personnel responsible for safety engineering.

**COVERAGE:** The booklet describes simple mechanization and automatization methods, that if used by individual plants may significantly reduce working hazards in casting, cutting, and forming metals and processing chemicals. Examples showing instrumentation of machine tools and other equipment with various feeders, loaders, and other safety devices are included. No personalities are mentioned.

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Improved Working Conditions Through Automation

SOV/2100

There are no references.

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AVAILABLE: Library of Congress (TJ213.M83)

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JG/bg  
8-14-59



MUSYAKOV, Leonid Abramovich; VIL'NER, Gersh Solomonovich; YASTREBOV,  
Anatoliy Vasil'yevich; DENISOVA, I.S., red.; GOLICHERKOVA,  
A.A., tekhn.red.

[Automatization as a means of improving working conditions]  
Avtomatizatsiia kak sredstvo ozdorovleniia uslovii truda.  
Izd-vo VTsSPS Profizdat, 1958. 71 p. (MIRA 12:2)  
(Automatic control)

VIL'NER, G.S.

Diamond needles for profilometers and profilographs. Standar-  
tizatsiia 24 no.8:42-43 Ag '60.3 (MIRA 13:9)  
(Diamonds, Industrial--Standards)

VIL'NER, G.S.

Truing and dressing abrasive wheels with diamond rolls. Stan.1  
instr. 32 no.2:37 F '61. (MIRA 14:2)  
(Grinding wheels)

VIL'NER, G.S.

Diamond grinding wheels. Standartizatsia 25 no.12:46-48  
D '61. (MIRA 14:11)

(Grinding, wheels--Standards)  
(Diamonds, Industrial)

SIMKIN, Yevel' Leybovich; VIL'NER, G.S., inzh., retsenzent;  
RYCHIN, S.A., inzh., retsenzent; ANDREYEVA-GALANINA,  
Ye.TS., prof., nauchn. red.; MISHKEVICH, G.I., red.

[Safety measures in working with pneumatic hand tools  
in shipbuilding] Tekhnika bezopasnosti pri rabote s  
ruchnym pnevmaticheskim instrumentom v sudostroenii.  
Leningrad, Sudostroenie, 1964. 60 p. (MIRA 18:2)

VIL'NER, I.A.

P. I. Romanovskii's "Fourier series. Field theory.  
Analytical and special functions. Laplace transform."  
Reviewed by I. A. Vil'ner. Usp. mat. nauk 16 no.1:235-238  
Ja-F '61. (MIRA 14:6)

(Mathematics)  
(Romanovskii, P.I.)

AUTHOR: Vil'ner, I.A. 30V/42-13-4-4/11  
TITLE: Topology and Geometry of the Space of an Imaginary Anamorphosis  
(Topologiya i geometriya prostranstva mrimoy anamorfozy)  
PERIODICAL: Uspekhi matematicheskikh nauk, 1958, Vol 13, Nr 4, pp 173-178 (USSR)  
ABSTRACT: For imaginary nomograms in a complex projective plane of four dimensions the author gives a real practically realizable interpretation. Eleven theorems and several definitions and conclusions are formulated. The author partially uses own not generally usual notations introduced in earlier papers. There are 6 references, 5 of which are Soviet, and 1 German.  
SUBMITTED: January 23, 1956

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VIL'NER, I. A.

Call Nr: AF 1108825

Transactions of the Third All-union Mathematical Congress (Cont.) Moscow  
Jun-Jul '56, Trudy '56, V. 1, Sect. Rpts., Izdatel'stvo AN SSSR, Moscow, 1956, 237 pp.

Vasil'yev, A. M. (Moscow). On Dependence Between  
Differential-geometric Properties.

144

Vedernikov, V. I. (Voronezh). Conformal Superposition  
of Surfaces.

144-145

Mention is made of Norden, A. P.

Verbitskiy, L. L. (Nikolayev). Conformal-Euclidean Metric  
of  $V_n$  in  $E_{n+1}$ .

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<sup>Anamorphosis Problem and/</sup>  
Vil'ner, I. A. (Moscow). Nomographic Interpretation of  
Complex Variable Functions.

145-146

Vil'ner, I. A. (Moscow). Nomographing Functions of  
Many Variables Based on the Method of Adjusted Points.

146

Volkov, Yu. A. (Leningrad). On the Existence of Convex  
Surfaces With Given Metric.

146

Mention is made of Aleksandrov, A. D.  
Card 47/80

\*



~~VIL'NER, I. A.~~

Stereoscopic nomography and spatial anamorphosis with a given  
scale [with summary in French]. Ukr.mat.shur. 9 no.2:121-133  
'57. (MIRA 10:7)

(Nomography(Mathematics))

VIL'NER, I.A.

Nomographic approximation of elliptic functions and nomograms  
in complex projective planes. Vych.mat. no.7:3-74 '61.

(MIRA 15:4)

(Nomography (Mathematics)) (Functions, Elliptic)  
(Geometry, Projective)

Vilner, I. A. Geometry of analytic functions. Doklady Akad. Nauk SSSR, 158, 43 (1964) (Russian).  
 Continuing to study, especially Akad. Nauk SSSR, Izv. Appl. Math. Mech. 18, 4, no. 2, 195-116 (1940), (R. Doklady, Akad. Nauk SSSR (N.S.), 53, 181-190 (1940); these Rev. 9, 534; 8, 494.) of the conditions under which an analytic function  $F(z, w) = 0$  can be represented by an alignment chart with two scales for  $z$  and two scales for  $w$ , the author introduces parameters  $K_j$  ( $j=1, 2, 3, 4$ ) and  $J_j$  ( $j=1, 2, 3$ ) depending on the first four derivatives of  $w$  with respect to  $z$ . The representation in question is possible if and only if all of the  $K_j$  are real and constant. In that case all scales are curved if and only if  $K_1$  and  $K_4$  are both different from zero while if  $K_1$  (or  $K_4$ ) only is zero  $w$  (or  $z$ ) only has straight scales and finally if both  $K_1$  and  $K_4$  are zero all scales are straight. Canonical forms are given for  $F(z, w) = 0$  if it can be nomographed as indicated. They take the form of the integral of the reciprocal of the square root of a linear function of the Weierstrass elliptic function. The invariants  $g_2$  and  $g_3$  are given in terms of the parameters  $K_j$ . Details of applying these results are to be given elsewhere.

R. Church (Annapolis, Md.).

Source: Mathematical Reviews.

Vol 10 No

VIL'NER, I.A., kand.fiziko-matematicheskikh nauk

Nomogram for determining the excess of air during incomplete  
combustion of fuel. Teploenergetika 7 no.2:88-89 F '60.  
(MIRA 13:5)

1. Vsesoyuznyy nauchnyy politekhnicheskiy institut.  
(Combustion)

-AM I 800: INFORMATION. 87/592

Teoriya resheniya po sovremennym problemam teorii funktsiy kompleksnykh peremennnykh (Investigation of Modern Problems in the Theory of Functions of Complex Variables); Collection of Articles Moscow, Fizmatgiz, 1976. 547 p. 5,000 copies printed.

Ms. (Title page): A. I. Markovskiy (Moscow) (Title page): V. A. Markovskiy (Moscow) (Title page): V. A. Markovskiy (Moscow).

REMARKS: This book is intended for specialists in the theory of functions of complex variables. It may also be used by students and teachers of scientific workers, and specialists in other fields of mathematics.

CONTENTS: The book contains 18 papers originally read at the 1976 International Conference on the Theory of Functions of a Complex Variable held at the University from May 23 to June 1, 1976. The papers are divided into 7 parts. The first part discusses the properties of functions of complex variables, boundary and extremal properties. The second part discusses the properties of functions of complex variables, boundary and extremal properties. The third part discusses the properties of functions of complex variables, boundary and extremal properties. The fourth part discusses the properties of functions of complex variables, boundary and extremal properties. The fifth part discusses the properties of functions of complex variables, boundary and extremal properties. The sixth part discusses the properties of functions of complex variables, boundary and extremal properties. The seventh part discusses the properties of functions of complex variables, boundary and extremal properties.

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# PART V

VILNER I A.

[illegible]

Source: International reviews.

VIL'NER, Iosif A. (Moskva A-167, Aviatsionnyy per.10, kv. 27, SSSR); GALAJDA,  
Pavel [Galajda, Pavel]

Nonelementary relations of the equations of the third nomographic  
order and their automorphic transformations. Mat fyz cas SAV  
14 no.1:6-43 '64.

1. Department of Mathematics of the Faculty of Mechanical Engineering,  
Higher School of Technology, Kosice, Komenskeho 40 (for Galajda).  
Submitted March 1, 1963.

Vil'ner, I. A.

Vil'ner, I. A. On the problem of the reduction of the nomogram to the form of a straight line. Math. Zh. 1964, 10, No. 1, 111-112. (Russian)

The author considers the problem of the reduction of the nomogram to the form of a straight line. It is shown that if the nomogram is of the first class (i.e., those with no more than two of the four scales curved) previously discussed (I. A. Vil'ner, Doklady Acad. Sci. USSR, N 5, 55, 193, 194, 1947, where Rev. 9, 106, and cited here), in general, it is not possible to reduce the nomogram to the form of a straight line. However, it is possible to reduce the nomogram to the form of a straight line if the nomogram is of the second class (i.e., those with more than two of the four scales curved). In this case, the nomogram can be reduced to the form of a straight line by a suitable choice of the parameter  $\alpha$ . The author also considers the problem of the reduction of the nomogram to the form of a straight line for the case of a nomogram of the third class (i.e., those with more than two of the four scales curved). In this case, the nomogram can be reduced to the form of a straight line by a suitable choice of the parameter  $\alpha$ .

Source: Mathematical Reviews.

Vol. 11 No. 9

*(Signature)*



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1.1 A/E 0-1

2. I. A. Analytical functions of a complex variable  
of the first nomographic class and their nomograms.  
U.S.S.R. Doklady Akad. Nauk (USSR) 53, 187-190  
(1957).

A functional relationship  $F(w, z) = 0$ , where  $F$  is analytic  
and  $w = p_1 + ip_2$ ,  $z = a + ib$ , is defined to belong to the first  
nomographic class if it can be reduced to two real equations  
of the canonical form  $f(p_1)A(a) + g(p_2)B(b) + h(p_3) = 0$ , for  
 $i = 1, 2, 3$ . For such functions there exist nomographs with  
angle scales for  $a$  and  $b$ . The author gives a determination  
of the functions in terms of elementary functions and  
elementary integrals. The canonical representations of these  
functions and nomographs are given. P. H. Kettner.

1.1 A/E 0-1

16,4500 16,5000 16,3000 16,6500

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D299/D302

AUTHOR: Vil'ner, I.A.

TITLE: On nomographic approximation of elliptic functions and nomograms in complex projective planes

SOURCE: Akademiya nauk SSSR. Vychislitel'nyy tsentr. Vychislitel'naya matematika, no. 7, 1961, 3 - 74

TEXT: The article consists of 2 chapters: I) Nomographic approximation of elliptic functions, and II) Nomograms in complex projective planes. Chapter I: A nomographic method is proposed for obtaining elementary approximations to elliptic functions. The theoretical aspect of the method was considered in earlier works by the author. The normalized elliptic integral of the first kind

$$W(1) = \frac{k^{(1)}}{\sqrt{1}} \int_0^{\frac{\pi}{2}} \frac{d}{\sqrt{1 - k^2 \sin^2 \varepsilon}} \quad (1.1)$$

is considered, where

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$$W_{(1)} = p_{(1)} + q_{(1)}i, k^{(1)} = \frac{k}{|k|}, z = a + bi, i = \sqrt{-1}. \quad (1.2)$$

The canonical representation of Eq. (1.1) is given by 2 jointly nomographable and vanishing Maslov determinants. The complex modulus  $k$  describes a lemniscate. Let  $m = 1/k_1^2$  ( $k_1$  being related to  $k$ ).

The curves  $m = \text{const}$ , are drawn, and an exact nomograph is constructed for calculating elliptic functions and integrals. By a projective transformation of the first nomogram, one obtains another circular metrical one. It was found that the best nomogram for Eq. (1.1) (and in general for any analytic expression), is its exact nomogram. The latter not only facilitates the finding of a possible approximation, but can be also used for the construction of an approximate expression for Eq. (1.1). At present, there are no other means for nomographic approximation, except the exact nomograph. Let the function  $w = f(z)$  be holomorphic inside and on the boundary of the circle  $C$  of radius  $R$ . This function is expanded in a Taylor series. With  $n = 1$ , one obtains

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$$|R_n| < \frac{MR}{R-r} \left(\frac{r}{R}\right)^2 \quad (3.6)$$

where one can take as  $R$  the distance between the point  $z_0$  and the nearest singularity of the function  $r(z)$ . Under certain conditions Eq. (3.1) ( $w = f(z)$ ) can be approximated by

$$w \approx f(z_0) + \frac{(z - z_0)}{1!} f'(z_0) + \frac{(z - z_0)^2}{2!} f''(z_0); \quad (3.9)$$

if  $\arg f''(z_0) = \pi n/2$ , then Eq. (3.9) is nomographable by a nomogram of the second kind. The first, more accurate approximation, is obtained by solving a system of elliptical equations. After computations one obtains

$$\operatorname{cn}^2(x, \sqrt{m}) = \frac{2m-1 + \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x \operatorname{ch}^2 x}}{2m \operatorname{ch}^2 x} \quad (5.11)$$

and

$$\operatorname{sh}^2(x, \sqrt{m}) = \frac{1 + 2 \operatorname{sh}^2 x - \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x \operatorname{ch}^2 x}}{2m \operatorname{ch}^2 x} \quad (5.12)$$

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$$\operatorname{dn}^2(x, \sqrt{m}) = \frac{\operatorname{ch} 2x - 2m \operatorname{sh}^2 x + \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x \operatorname{ch}^2 x}}{2 \operatorname{ch}^2 x} \quad (5.13)$$

Further, an approximate elementary formula is derived for Weierstrass's function  $\wp(x, g_2, g_3) \equiv \wp(x)$ . One obtains

$$\wp(x) \approx -\frac{2m(m-1)k^2 x_1 + 1 - 5m - (m+1)\sqrt{(2m-1)^2 + 4mm_1 \cos^2 x_1 \operatorname{ch}^2 x_1}}{(m+1)(m-2)(1-2m)x_2} \times \quad (6.6)$$

$$\frac{2(1-m+m^2)g_1}{(m+1)(m-2)(1-2m)x_2} \quad (6.7)$$

where

$$x_1 = 3x \sqrt{\frac{(1-m+m^2)g_1}{(m+1)(1-2m)(2-m)g_2}}$$

By means of these formulas it is possible to find an approximate expression for any elliptic function. For the integral

$$\omega = \int_0^z \frac{d\xi}{\sqrt{1-k^2 \sin^2 \xi}}, \quad \omega = p + qi, \quad z = a + bi \quad (6.8)$$

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one obtains the approximate formulas

$$\cos z \approx \sqrt{\frac{|\cos w|}{\operatorname{ch} w}}, \quad \sin z \approx \sqrt{\frac{\operatorname{ch} w - |\cos w|}{\operatorname{ch} w}}, \quad (6.9)$$

for  $m = 0.5$ . The accuracy of the obtained approximations is very high. The obtained formulas can be also used for complex values of  $x$ . Weierstrass's formula can be rewritten as

$$\wp(v) = e \frac{2n(m-2)\operatorname{sh}^2 x_1 + 1 - 5m - (m+1) \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x_1 \operatorname{ch}^2 x_1}}{1 + 2m \operatorname{sh}^2 x_1 - \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x_1 \operatorname{ch}^2 x_1}} \times \quad (6.24)$$

$$x_1 = x \sqrt{-\varepsilon} \sqrt{\frac{3g_2}{4(1-m+m^2)}}. \quad (6.25)$$

where

Further, rougher approximation is considered. Nomographs are given of some elementary functions, (hyperbolic trigonometric functions of a complex argument). The accuracy of the obtained formulas is compared with well-known approximations of elliptic functions, ob-  
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tained by expansion in infinite series or products. The obtained formulas yielded more accurate results. The numerical examples illustrated the usefulness of nomographic approximation of higher transcendental functions by means of elementary functions, and the nontriviality of this approximation. Further, general methodological principles of nomographic approximation are set forth and some function-theoretical nomographic results (obtained recently by A.N. Kolmogorov and his school), are reviewed. The case is considered when no best approximation (in the sense of Chebyshev) exists; instead of the best approximation, one determines the allowed approximation of the function  $z = F(x, y)$ , given on the set  $M$ , by the nomographic functions  $z = f(x, y)$ , also given on  $M$ . Let

$$d \equiv d(r, F; M) = \sup_M |F(x, y) - f(x, y)|. \quad (13.4)$$

The number  $d_0 = \inf_f d$  is called the index of accuracy of the nomographic approximation of  $F$  on the set  $M$ , by functions which belong to a given class of functions  $f$ . Although the problem of finding nomographable approximations, is indeterminate in general and a large number of unrelated practical methods exist, the author proposes

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ses to calculate the indexes of accuracy of a nomographic approximation of  $F$ , by means of continuous nomographable functions of each of the given class of functions  $f$ , and to find the simplest possible method of choice of the allowed function  $f$  on the basis of the accuracy  $\varepsilon > d_0$  of the allowed nomographic approximation. The class of nomographable functions of a complex variable is expressed by

$$\bar{\omega} = A \int_0^{z=z_0} \frac{\partial z}{\sqrt{V(z, g_1, g_2) - B}} + \omega_0 = A \int_0^{V(z-z_0)} \frac{dz}{\sqrt{V(z-B)(4z^2 - g_1z - g_2)}} + \omega_0 \quad (13.6)$$

Further, a concrete method of nomographic approximation to analytic functions by means of analytic nomographable functions is proposed; the method is based on a theorem proved by the author. Finally, it is shown that the approximate formulas for the derivatives of elliptic functions (Jacobi's as well as Weierstrass's), can be obtained in two different ways. The degree of accuracy of the approximations is estimated. Chapter II: The theory is developed of nomographing of functions of a complex double or dual variable in the real projective plane. The concept is introduced of double or dual nomo-

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grams of functions of type  $f(z_1, z_2, z_3) = 0$ , considered in the projective plane and defined over double (elliptic complex numbers  $z = x + \varepsilon y$ ,  $\varepsilon^2 = +1$ ) or dual (parabolic numbers  $z = x + \omega y$ ,  $\omega^2 = 0$ ) algebras, whose geometry is studied in reference 3 (B.A. Rozenfel'd Neyevklidovy geometrii (Non-Euclidean Geometries), GITTL, 1955). This chapter constituted the second part of an earlier work by the author (Ref. 1: Topologiya i geometriya prostranstva mnimoy anarmofozy. UMN, v. 13, no. 4 (82), 1958); there it was published in abbreviated form. The basic formulas for nomographability of functions of double or dual variables, are derived. It is shown that many geometrical properties, characteristic of nomograms of ordinary functions of a complex variable, are retained. Further, a real space is constructed for the interpretation of the corresponding complex nomograms of functions of more than 2 complex variables  $x + \varepsilon y$  or  $x + \omega y$ . The projective plane, constructed over double and dual algebras, is denoted by  $\mathbb{P}_2$  and  $\mathbb{P}_2'$ , and the corresponding linear real spaces -- by  $\mathbb{L}_4^*$  and  $\mathbb{L}_4'^*$ . The linear interpretations of the complex nomograms have two applications: 1) The hyperbolic, parabo-

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lic and elliptic numbers are used in the study of the linear geometries of the corresponding non-Euclidean and Euclidean spaces, and 2) In the 9 plane geometries of Klein, corresponding to the 9 possible metrics of length and angle. After the projective space  $P_2^*$  has been constructed, the space  $L_4^*$  is defined as the space of pairs of real straight lines of the space  $E_{300}$ , which are reciprocal polars with respect to the imaginary sphere  $\tilde{K}$ . The pairs of straight lines are called "points" of the space  $\tilde{L}_4^*$ . The configuration theorems (Desargue's, Pascal's, etc.) hold in  $L_4^*$ . The above theoretical considerations make it possible to design a "straight line" of space  $\tilde{L}_4^*$  in the form of a material "ruler". This ruler is made of 2 rectangular metal strips, put together so as to form an "X-shape" (scissors); similar "rulers" are constructed in the spaces  $L_4^*$  and  $\tilde{L}_4^*$ . The rulers for all 3 spaces  $L_4^*$ ,  $\tilde{L}_4^*$  and  $\tilde{\tilde{L}}_4^*$  can be executed in the form of a simple instrument, (shown in a figure). The constructed linear space contains a linear interpretation of double and dual variables, isomorphic to real nomograms. It is noted that all 3

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complex nomographs ( $i^2 = -1$ ,  $\varepsilon^2 = +1$ ,  $\omega^2 = 0$ ), are of practical interest in nomographing functions of corresponding complex variables, met in linear real geometries of hyperbolic, elliptic and parabolic space. Finally, various conformal nomographs are considered. Thereby the corresponding Euclidean and Riemannian metrics are introduced in the conformal planes  $z = a + bi$ ,  $z = a + b\varepsilon$ , and  $z = a + b\omega$ . The author notes that the construction of nomographs in projective spaces can be further developed, in particular over other algebras (quaternions, alternions, etc.). There are 21 figures and 25 references (14 belonging to the first chapter, and 11 to the second): 17 Soviet-bloc and 8 non-Soviet-bloc (including 5 translations). The reference to the English-language publication reads as follows: A.A. Albert, Quadratic forms permitting composition. Ann. of Math., 43, 1942, 161-177.

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USSR/Mathematics - Nomography

1 May 53

"Algebraic Solution of the Problem of Anamorphosis of Functions in Invariant Form,"

I. A. Vil'ner

DAN SSSR, Vol 90, No 1, pp 5-8

Dets the vectors  $\mathbf{a}_i$  ( $i = (1, 2, 3)$ ) from the eq  $F = (a_{123})$ . This eq is encountered in the problem of the anamorphosis of a function  $F$  that depends on three abstract variables  $z_1, z_2, z_3$  and on any number of parametric abstract variables  $z_4, z_5, \dots$  (which influence automatically the dimension and nature of the scales and fields of the nomogram). Makes the nonrestrictive assumption that vector  $\mathbf{a}_3$  does not depend on  $z_1, z_2$ . Cites the book *Nomograficheskiy Sbornik* (Nomographic Symposium), Moscow State Univ, 1951. Thanks Acad A. N. Kolmogorov, who presented the paper, 12 Mar 53.

VILNER, I A

4000

Vilner, I. A. Diagrams for calculating the hyperbolic and circular tangents and cotangents of complex argument. Akad. Nauk SSSR. J. Appl. Math. Mech. NS 4 no. 1 145-152 (1940). (Russian. English summary)

An alignment diagram is presented which permits determination of any two of the four quantities in the relation  $\tanh(\alpha + i\beta) = re^{i\phi}$  when the other two are given. The four scales are arranged in a rectangular frame. The expression very closely resembles the nomogram for  $\tan z$  given by H. Schwendt [Die Anordnung der Nomographie in der Mathematik, Springer, Berlin, 1931, figure 235]. The equations connecting the variables are those of I. Vilner [Izvestia, 33, 1947, 10]. Although the diagram is not as effective as Schwendt's, Vilner's diagram, it is shown to be a real improvement over his since the ranges of the variables that are included permit solution for any values. The scales are also calibrated so they can be used for  $\tan(\alpha + i\beta) = re^{i\phi}$ . R. Church (Annapolis, Md.).

Source: Mathematical Reviews,

Vol 7 No. 7

Vilner, I. A. Sur les nomogrammes des systemes d'equations a deux fonctions analytiques. *J. Appl. Math. Mech.* N 4 1940, 335-338. (Russian. French summary.)  
 Necessity and sufficient conditions are given for the possibility of constructing nomograms of a system of two straight scales for  $x$  and  $y$ . The method of constructing nomograms for  $x$  and  $y$  is given. The method of determining the conditions for the existence of nomograms is given.

Source: Mathematical Reviews,

$$\Delta_1 = \frac{1}{2} \ln \frac{f_1(x)}{f_2(x)} + \frac{1}{2} \ln \frac{f_3(x)}{f_4(x)}$$

and  $\tau_1 = f_1(x) / f_2(x) = f_3(x) / f_4(x)$ . The proof as outlined follows. To reduce the nomogram to form if the conditions are satisfied.

The method applied to analytic functions of a complex variable, where  $z = a + ib$  and  $w = p + iq$ . It is shown that if both functions follow the conditions of the type of Riemann's theorem, then the nomogram is of the type of Riemann's theorem. (1871) are satisfied.

$$\frac{a_1}{a_2} = \frac{b_1 \ln \tau + 0}{b_2 \ln \tau} = \frac{p_1}{p_2}$$

the nomogram is possible with eight scales for  $a, b, p, q$ ; where  $a, b, p, q$  are functions of  $x$  and  $y$ . If the conditions are satisfied, the chart has  $a$  and  $b$  (or  $p$  and  $q$ ) scales straight and the other two on a conic. An odd number of curved scales is impossible for an analytic function. Corresponding results are given for  $w$  in the form  $w = u + iv$ . The tests are applied briefly to eight functions as illustrations, one is the subject of the paper reviewed above.

(1871)  
 001

VIL'NER, I.A.

Topology and space geometry of imaginary anamorphosis. Usp. mat.  
nauk 13 no.4:173-178 Jl-Ag '58. (MIRA 12:1)  
(Geometry) (Memography (Mathematics))





89048

S/O4/60/000/009/019/021  
C111/C222

16.6500

AUTHOR: Vil'ner, I.A.

TITLE: The Problem of the General Anamorphosis in the Space and on the Plane, its Algebraization and Stereoscopic Nomography

PERIODICAL: Referativnyy zhurnal. Matematika, 1960, No.9, p.201,  
Abstract No.11003. Sb.statey Vses.zaochn.politekhn.in-ta,  
1958, vyp.21, pp.98-118

TEXT: The paper contains the consideration of numerous questions of the theoretical nomography, especially of those mentioned in the title. The problem of the anamorphosis in the  $N+1$ -dimensional space is reduced to the  $N$ -dimensional case by a repetition of the variables and by an empirical selection of the solutions of certain functional equations. ✓

[Abstracter's note: The above text is a full translation of the original Soviet abstract.]

Card 1/1



VIL'NER, I.A.

SUBJECT USSR/MATHEMATICS/Applied mathematics CARD 1/2 PG - 699  
 AUTHOR VIL'NER I.A.  
 TITLE Stereoscopic nomography and the solution of the problem of  
 general anamorphosis in the N-dimensional space.  
 PERIODICAL Uspechi mat.Nauk 11, 4, 123-130 (1956)  
 reviewed 4/1957

The author proposes the application of spatial nomograms with the aid of the stereoscopic projection. Let the problem of the general spatial anamorphosis of the equation be solved, the point  $M(x,y,z)$  of the spatial nomogram be given by the author's formulas (compare: Vil'ner, Doklady Akad.Nauk 58, 5, (1947); Doklady Akad.Nauk 90, 1, (1953); Uspechi mat.Nauk 8, (1953); Mat. Sbornik, n.Ser. 27, 1, (1950)). Let  $(a_1, b_1, c_1)$  be the centers of projection which e.g. agree with the pupil of the left hand eye ( $i=1$ ) or the right hand eye ( $i=2$ ). The projections of  $M$  onto the image plane of the nomogram  $(X,Y)$  for the left hand eye and the right hand eye are given by

$$X = a_1 - c_1 \frac{x-a_1}{z-c_1}, \quad Y = b_1 - c_1 \frac{y-b_1}{z-c_1}.$$

Taking  $c_1 = c_2 = c$ ,  $b_2 = b_1 = 0$  and  $a_2 = -a_1 = -a$ , then one obtains simpler relations. The obtained equations represent two simple simultaneously

Uspechi mat.Nauk 11, 4, 123-130 (1956)

CARD 2/2

PG - 699

nomogrammable systems the nomograms of which can be established in advance without difficulties so that such a spatial nomography becomes not more difficult than the ordinary one.  
Under neglection of details some generalizations are given.

VIL'NER, I. A.

Analiticheskiye funktsii kompleksnogo peremennogo pervogo nomograficheskogo klassa i ikh nomogrammy. DAN, 53 (1946), 191-194.

Nomogrammy analiticheskikh funktsiy kompleksnogo peremennogo M., Dissertatsiya (1947).

SO: Mathematics in the USSR, 1917-1947

edited by Kurosh, A.G.,

Markushevich, A.I.,

Rashevskiy, P.K.

Moscow-Leningrad, 1948

VIL'NER, I.A.

Algebraic Solution of the Problem of the Anamorphose of Functions in an Invariant  
Form. DAN SSSR, n. Ser. 90, 5-8- (1953).

VIL'NER, I. A.

"Homograms of Analytical Functions of a Complex Variable (First Class)."  
Sub 5 Mar 47, Moscow Order of Lenin State U imeni M. V. Lomonosov

Dissertations presented for degrees in science and engineering in Moscow  
in 1947

SO: Sum No. 457, 18 Apr 55



VILNER, I. A. Cand. Physicomath. Sci.

Dissertation: "Nomograms of Analytical Functions of a Complex Variable (First Class)."  
Moscow Order of Lenin State U. imeni M. V. Lomonosov. 5 Mar. 1947.

SO: Vechernaya Moskva, Mar. 1947 (Project #17836)

VIL'NER, I. A.

USSR/Mathematics - Nomograms

Card 1/1

Author : Vil'ner, I. A.

Title : Nomograms for the computation of elliptic functions and integrals

Periodical : Usp. mat. nauk, 9, No 2(60), 113-124, 1954

Abstract : Seven nomograms that permit one to find the value of  $x = \operatorname{sn}(t, k)$  for complex values of the modulus  $k$  and the variables  $x$  and  $t$ . Acknowledges the assistance of L. A. Lyusternik, Corresponding Member of the Academy of Sciences USSR. Methods are shown for finding the values of the other elliptic functions  $\operatorname{cn}(t, k)$ ,  $\operatorname{dn}(t, k)$  and the integrals  $t = \int_0^x \frac{dz}{\sqrt{1 - K^2 \sin^2 z}} - 1/2 dz$ .

Submitted : May 8, 1952

VIL'NER, I. A.

Mathematical Reviews  
Vol. 14 No. 10  
Nov. 1953  
Numerical and Graphical  
Methods.

7-13-54

LL

Vil'ner, I. A. The analytic theory of nomographing a function of a complex variable of the first class. Mat. Sbornik N.S. 27(69), 3-46 (1950). (Russian)

In various earlier papers [see especially Doklady Akad. Nauk SSSR (N.S.) 58, 729-732 (1947); these Rev. 9, 534] the author has given summaries and certain practical applications of his work on representing an analytic function  $p+iq=f(a+ib)$  as an alignment chart. The present paper gives a more detailed account of this work, stressing its mathematical aspects. The paper is, however, far from self-contained; essential steps in arguments and even statements of results are abbreviated by detailed references to the author's dissertation (1946) which is unfortunately not available to the reviewer. As not explicitly mentioned in previously reviewed papers the following may be mentioned: (1) several further sets of necessary and sufficient conditions for  $w=f(z)$  to be of first class (i.e., no more than two of the four scales curved), (2) the theorem and some consequences that if  $z=f^{-1}(f(z))$  is of first class with  $z$  scales straight, the same is true of  $z=\ln f(w)$ , and (3) the derivation of relations among nomograms for branches of a multiple-valued function if they are of the first class.

R. Church (Monterey, Calif.).

① Math

2

VIL'NER, I.A.

Relations between the minors of one or two matrices. Usp.mat.nauk 8 no.5:139-  
146 S-O '53.

(MLRA 6:10)

(Matrices)

VIL,NER, I. A.

33009

Privedenie homografiruemoy analiticheskoy zavisimosti k normal'noy forme. Doklady Akad. Nauk SSSR, Novaya seriya, t. LXIX, No 1, 1949, c. 3-6 Bibliogr: 7 nazv.

SO:Letopis' Zhurnal'nykh Statey, Vol. 45, Moskva, 1949

Vil'ner, I. A.

U S S R

Vil'ner, I. A. Algebraic solution of the problem of anamorphosis of functions in invariant form. Dokl. Akad. Nauk SSSR (N.S.) 90, 5-8 (1953). (Russian)

Vil'ner, I. A. Solution of the problem of anamorphosis of functions in  $(N-1)$ -dimensional space by vector-algebraic methods. Uspehi Mat. Nauk (N.S.) 8, no. 3(55), 153-156 (1953). (Russian)

In the first of these two papers it is stated that the vanishing of the fourth order determinant  $|a_{ij}|$ ,  $a_{ij} = F_{i_1 i_2 i_3 i_4}^{j_1 j_2 j_3 j_4}$ , is necessary and sufficient for the representation as a scalar product:

$$F(z_1, z_2, z_3) = \sum_{i=1}^3 a_i(z_1) b_i(z_2, z_3).$$

Further necessary and sufficient conditions for the representation of  $F$  as a scalar triple product (Massau determinant)  $\bar{a}_3 \cdot \bar{a}_1 \times \bar{a}_2$ , where each vector  $\bar{a}_i$  depends only on the corresponding variable  $z_i$ , are the vanishing of two more determinants of third order:  $|a_{ij}|$ ,  $a_{ij} = F_{i_1 i_2 i_3}^{j_1 j_2 j_3}$ ,  $k=1, 2$ . If it is

$I = F/\pi$

b2

*Vil'ny, I. I.*

The author showed the existence of such nomograms earlier and gave [C. R. (Doklady) Acad. Sci. URSS (N.S.) 55, 783-786 (1947); MR 9, 106] the canonical representation and defining equations. Applications to the solution of certain equations involving elliptic integrals are outlined. Approximate formulas for elliptic functions that have been obtained from these investigations are given.

*R. Church (Monterey, Calif.).*

Vilner, I. A. On relations among the minors of certain matrices. Uspehi Matem. Nauk (N.S.) 8, no. 5(57), 139-146 (1953). (Russian)

This paper contains theorems which correspond to the theorem on "development by non-conforming cofactors". One such theorem is the following, which concerns minors of an  $(n+1) \times n$  matrix. Let  $i_1, j_1$  be integers,  $1 \leq i_1 < \dots < i_{n+1} \leq n$ ;  $0 \leq j_1 < \dots < j_n < n$ . Let  $M_0$  be the  $n \times n$  minor determinant on the first  $n$  rows; let  $M_{i_1}$  be the minor determinant obtained by striking out rows with indices  $i_1$  (all  $i$ ) and columns with indices  $j_i + 1$  (all  $i$ ). Let  $M_i$  be the  $n \times n$  minor determinant on all rows except the  $i$ th; let  $M_{i,j}$  be the minor determinant obtained by striking out the  $(n+1)$ th row and rows with indices  $i_i$  ( $i \neq j$ ) and columns with indices  $j_i + 1$  (all  $i$ ); then the relation  $M_0 M_{i,j} + \sum_{i=1}^{n+1} M_i M_{i,j} = 0$  holds. More complicated theorems are given for minors of an  $(n+r) \times n$  matrix.

J. L. Brenner (Pullman, Wash.).



24.3900

S/051/62/012/003/013/016  
EO32/E314

AUTHORS: Vil'ner, L.D. (Deceased), Rautian, S.G. and  
Khaykin, A.S.

TITLE: On some possible applications of the Fabry-Perot  
interferometer with internal illumination

PERIODICAL: Optika i spektroskopiya, v. 12, no. 3, 1962,  
.437 - 439

TEXT: The authors are concerned with the properties of a  
Fabry-Perot interferometer containing an emitting medium between  
the plates. This type of modification of the Fabry-Perot inter-  
ferometer is of interest in view of the suggestion made by  
A.M. Prokhorov (Ref. 1 - ZhETF, 34, 1658, 1958) that it may be  
suitable for use as a resonator for a quantum oscillator  
(Ref. 2 - N.G. Basov, O.N. Krokhin, Yu.M. Popov - Usp. fiz.  
nauk, 72, 161, 1960). Other applications are also discussed in the  
present paper. It is assumed that the medium between the plates  
has a finite absorption coefficient and emits uniformly through-  
out its volume. A formula is derived for the intensity

Card 1/2

On some possible applications .... S/051/62/012/003/013/016  
E032/E314

distribution and it is shown that the resulting interference pattern takes the form of concentric interference rings. Analysis shows that this arrangement improves the line-to-background ratio and may therefore be suitable for the spectral analysis of very small quantities of impurities and similar applications. There is 1 figure.

SUBMITTED: June 12, 1961

J

Card 2/2

MIRONOVA, L.L.; GOL'DRIN, N.Ye.; EL'BERT, L.B.; LASHKEVICH, V.A.;  
VIL'NER, L.M.

Study of some conditions for trypsinization of monkey kidneys  
capable of increasing cell harvests. Vop.virus 7 no.4:119-121  
Jl-Ag '62. (MIRA 15:8)

1. Institut poliomyelita i virusnykh entsefalitov AMN SSSR,  
Moskva. (TISSUE CULTURE) (KIDNEYS) (TRYPSIN)

CHUMAKOV, M.P.; L'VOV, D.K.; SARMANOVA, Ye.S.; GOL'DFARB, L.G.; NAYDICH, G.N.;  
CHUMAK, N.F.; VIL'NER, L.M.; ZASUKHINA, G.D.; IZOTOV, V.K.;  
ZAKLINSKAYA, V.A.; UMAN'SKIY, K.G.

Comparative study of the epidemiological effectiveness of vaccinations with tissue culture and brain vaccines against tick-borne encephalitis. Vop. virus. 8 no.3:307-315 My-Je'63.  
(MIRA 16:10)

1. Institut poliomyelita i virusnykh entsefalitov AMN SSSR,  
Moskva i Kemerovskaya oblastnaya sanitarno-epidemiologicheskaya  
stantsiya..  
(ENCEPHALITIS—PREVENTIVE INOCULATION)

VIL'NER, L. M.: Master Med Sci (diss) -- "The chick embryo as an experimental model in the study of the virulence and immunogenicity of strains of *S. typhi*". Moscow, 1959. 15 pp (Min Health USSR, Central Inst for the Advanced Training of Physicians), 200 copies (KL, No 8, 1959, 138)

VIL'NER, L.M.

Cultivation of typhoid microbes in developing chick embryos. Zhur.  
mikrobiol. epid i immun. 31 no.6:17-19 Je '60. (MIRA 13:8)

1. Iz Gosudarstvennogo kontrol'nogo instituta meditsinskikh biologicheskikh preparatov imeni Tarasevicha.  
(SALMONELLA TYPHOSA)

ETINGOF, R.N.; DZAGUROV, S.G.; VIL'NER, L.M.

Possibility of culturing the poliomyelitis virus on simple media.  
Vop. virus. 7 no. 1:115-118 Ja-F '61. (MIRA 14:4)

1. Institut po izucheniyu poliomyelita AMN SSSR, Moskva.  
(POLIOMYELITIS)  
(BACTERIOLOGY—CULTURES AND CULTURE: MEDIA)

DZAGUROV, S.G.; SHMELEVA, G.A.; VIL'NER, L.M.

Comparative study of the dynamics of the inactivation of a virus  
in dialyzed and nondialyzed specimens of vaccine against poliomyelitis  
detoxified with formaldehyde. Vop. virus. 6 no.5:616-617 S-0 '61.  
(MIRA 15:1)

1. Institut poliomiylita i virusnykh entsefalitov AMN SSSR, Moskva.  
(POLIOMYELITIS)



CHUMAKOV, H.P.; L'VOV, D.K.; GAGARINA, A.V.; VIL'NER, L.M.; KODIN, I.M.;  
ZAKLINSKAYA, V.A.; GOL'DFARB, L.G.; KRAMOVA, M.K.

Study of conditions influencing the effectiveness of immunization  
against tick-borne encephalitis. Report No.1: Influence of the  
immunogenic properties of the vaccine on the effectiveness of  
vaccination and revaccination. Vop. virus. 10 no.2:168-172 Mr-Ap  
'65. (MIRA 18:10)

1. Institut poliomielita i virusnykh entsefalitov AMN SSSR, Moskva.

GAGARINA, A.V.; VILNER, L.M.; VASENOVICH, M.I.; SVET-MOLDAVEKAYA, I.A.; KHANINA, M.K.; SVET-MOLDAVEKIY, G.Ya.

Nonencephalitogenic formolized vaccine against tick-borne encephalitis.  
Vcp. virus. 9 no.2:167-169 Mr-Apr '64. (MIRA 17:12)

1. Institut poliomielita i virusnykh entsefalitov AMN SSSR, Moskva.

CHUMAKOV, M.P.; L'VOV, D.K.; GOL'DFARB, L.G.; ZAKLINSKAYA, V.A.;  
GAGARINA, A.V.; MASHKOV, V.T.; YASIN, A.Ye.; RODIN, V.I.;  
VIL'NER, L.M.

Effect of the length of intervals between inoculations on the  
efficacy of vaccination and revaccination against tick-borne  
encephalitis. Vop. virus. 10 no.3:266-270 My-Je '65.

(MIRA 18:7)

1. Institut poliomyelita i virusnykh entsefalitov AMN SSSR, Moskva,  
i Kemerovskaya oblastnaya sanitarno-epidemiologicheskaya stantsiya.

VII'NER, I.S.

Some data on the results of treatment of cancer patients with  
cadmium iodide and semicarbazide hydrochloric acid at the  
Second United Hospital of the Moscow district of Leningrad.  
Vop. onk. 9 no. 6:126-128 '66. (MIR 17:2)

1. Iz 2-oy ob'yedinennoy bol'nitsy Moskovskogo rayona (glavnyy  
vrish - P.G. Kachalova).

VIL'NER, P.D. (Kuybyshev); OSIPOV, N.Ya. (Kuybyshev)

Determining dynamic rigidities of rotors by the method  
of expansion of dynamic flexures in series according to  
natural forms. Izv. vys. ucheb. zav.; av.tekh. 2 no.1:  
111-124 '59. (MIRA 12:3)

(Rotors)

VARENITSIA, Ye.T., doktor biolog. nauk; KATKOVA, M.M., kandi. sel'skokhoz.  
nauk; VIL'NER, R.A., s'arshiyy zootekhnik

Increasing the butterfat percentage of black and white cattle  
using hybrid bulls from the 'Gorki. leninskiye' Farm.  
Agrobiologiya no.3:40-410 My-Je '65. (MIRA 18:11)

1. Nauchno-issledovatel'skiy institut sel'skogo khozyaystva  
tsentral'nykh rayonov severnozemnoy zony.

GAPEYEV, Boris Mikhaylovich; VIL'NER, S.L., retsenzent; SMIRNOVA,  
G.V., tekhn. red.

[Taking apart, cleaning and reassembling wrist watches] Raz-  
borka, chistka i sborka naruchnykh chasov. Moskva, Mashgiz,  
1961. 20 p. (MIRA 15:9)  
(Clocks and watches--Repairing and adjusting)

VIL'NER, V.A., inzh. (Kiyev) SOKOLOV, V.G., inzh. (Kiyev)

Fine grained improved asphalt concrete. Gor. khoz. Mosk. 32  
no.6:31 Je '58. (MIRA 11:7)

(Asphalt concrete)



VIL'NER, Yakov Moiseyevich, dots.; VOMYARSKIY, Iosif Pinkhusovich,  
dots.; KOVALEV, Yakov Timofeyevich, dots.; KUZMENKOV,  
Vasiliy Ivanovich, dots.; LAZAREVICH, Ivan Grigor'yevich,  
dots.; SHUL'PIN, Igor' Aleksandrovich, dots.; AKALOVICH,  
N.M., red.

[Laboratory practice in hydraulics: Manual and methodological  
instructions on laboratory procedures in hydraulics; for cor-  
respondence and part-time students] Laboratornyi praktikum po  
gidravlike: Rukovodstvo i metodicheskie ukazaniia po provede-  
niiu laboratornykh rabot po gidravlik dlia studentov zaochno-  
nogo i vechernego obucheniia. [By] I.A.M.Vil'ner i dr. Minsk,  
Izd-vo M-va vysshego, srednego spetsial'nogo i professional'-  
nogo obrazovaniia BSSR, 1961. 131 p. (MIRA 18:4)

1. Kafedra gidravliki Belorusskogo politekhnicheskogo insti-  
tuta (for all except Akalovich).

VILNIANSKY, L. I.

EXCERPTA MEDICA Sec.3 Vol.11/9 Endocrinology Sept57

1683. VILNIANSKY L. I. Ukrainian Inst. of Tuberc. and Clin. Sect., Ukrainian Inst. of Exp. Endocrinol., Kharkov, USSR. \*Some peculiarities in the clinical course of tuberculosis in patients with diabetes mellitus (Russian text) PROBL. ENDOKR. 1956, 2/3 (64-68)

The symptomatology of the infiltrative form of tb in diabetes mellitus shows some peculiarities: a more protracted course with little or no symptoms, less pronounced febrile reactions, a rare onset in form of a grippe, and difficulties in finding tb bacilli in the sputum. The subjective picture is at first reminiscent of diabetes mellitus manifestations. These peculiarities impose the necessity of systematic roentgenological investigations in all patients with diabetes to reveal the tb in time.

Krimsky - Moscow (XV, 3, 6)

VIL'NINA, M.A.

More about the quality and classification of fine wool. Tekst. proz.  
23 no.8:25-27 Ag '63. (MIRA 16:9)

1. Glavnyy inzh. Nevinnomysskoy fabriki pervichnoy obrabotki  
shersti.  
(Wool—Standards)

ORLOV, I.M., dotsent; VIL'NINA, M.A.; METEL'KOVA, T.V.

Quality of the wool from fine-wooled sheep bred in the Northern  
Caucasus and Kalmyk A.S.S.R. Tekst. prom. 24 no.2:18-19 F '64.  
(MIRA 17:3)

1. Kafedra tovarovedeniya i tekhnologii zhivotnogo syr'ya  
Moskovskoy veterinarnoy akademii (for Orlov).
2. Glavnyy inzh.  
Nevinnomysskoy fabriki pervichnoy obrabotki shersti (for Vil'nina).
3. Nachal'nik nauchno-issledovatel'skoy laboratorii Nevinnomysskoy  
fabriki pervichnoy obrabotki shersti (for Metel'kova).

VILNIS, R., CAND TECH SCI, "THERMAL DECOMPOSITION OF  
DAMP PEAT <sup>damp</sup> IN DRYING WITH RECIRCULATING SUPERHEATED STEAM  
UNDER PRESSURE." RIGA, 1961. (STATE COM <sup>of</sup> FOR HIGHER AND  
SEC SPEC ED OF THE COUNCIL OF MINISTERS LASSR, LATVIAN  
AGR ACAD). (KL, 3-61, 213).

AUTHORS: Gul', V. Ye., Vil'nits, S. A. SOY/156-58-2-41/48

TITLE: Temperature Influence on the Kinetics of Growth of the Cutting of Vulcanizate (Vliyaniye temperatury na kinetiku razrastaniya nadreza v vulkanizate)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 2, pp. 365-368 (USSR)

ABSTRACT: Several new papers (Refs 1- 4) give evidence of the fact that the rupture of the vulcanizate represents a process which continues to develop in the course of time. A slow and a rapid stage of rupture is distinguished. (Ref 1). It was shown by slow-motion pictures that the velocity of tearing is first very small but later it increases jump-like. This can be observed with as well as without a cutting. The influence of cutting was investigated in detail (Ref 5). The tearing of a vulcanizate has much in common with the tearing of brittle materials (L.N. Tsarskiy and G.Z. Krasikova participated in the experiment). Nevertheless the difference between the mechanism of a highly elastic and a brittle

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Temperature Influence on the Kinetics of Growth  
of the Cutting of Vulcanizate

SOV/156-58-2-41/48

tearing is so considerable that important changes of the time course of its growth within the range of the passing from the highly elastic to the vitrified state could be expected. This was the purpose of the present investigation. Filled vulcanizates served for the experiment: mixture Nr 1: rubber SKB and Nr 2: SKB with natural rubber at a ratio of 4 : 6, mixture Nr 1 contained 45%, Nr 2 - 10% of soot. The vulcanizates could be tested at temperatures of up to  $-57^{\circ}$ . The projection of the slow-motion pictures made possible a retardation by 10 to 500 times. It can be seen from the elaboration of the motion pictures on the analyzer that at all temperatures the shape of the curves described already earlier could be observed (Ref 5). The initial velocity of tearing is so small that it cannot be investigated by means of the slow-motion picture method. Immediately before the end of tearing its velocity increases jump-like. In the case of the same conditions the maximum velocity is determined by the temperature of examination. At a lowering of temperature

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Temperature Influence on the Kinetics of Growth  
of the Cutting of Vulcanizate

SOV/156-58-2-41/48

from 22 to 0° the velocity decreases from 2500 to 1000 mm/sec. The latter continues to decrease and then increases again at -50° and lower: it then reaches values of approximately 3000 mm/sec. Figure 1 shows the dependence concerned. Velocity does not change regularly. Apparently this change of the time course is in connection with the passing from a highly elastic tearing to a brittle one. The passing from a highly elastic state into a vitrified one is accompanied by a decrease of velocity of the formation of cracks and other phenomena. Their consideration is of great importance for the solution of practical problems which are connected with the mechanical destruction of vulcanizates. There are 2 figures and 9 references, 8 of which are Soviet.

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Temperature Influence on the Kinetics of Growth  
of the Cutting of Vulcanizate

SOV/156-58-2-41/48

ASSOCIATION: Kafedra fiziki Moskovskogo instituta tonkoy khimicheskoy  
tekhnologii im. M. V. Lomonosova (Chair of Physics of the  
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SUBMITTED: October 29, 1957

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ZINOV'YEV, Vladimir Andreyevich, prof.[deceased]; PRISHED'KO,  
Nikolay Avtonomovich; ~~VIL'NITS, Samuil Vyseychich.~~  
FADEYEV, I.I., red.; BOCHAROVA, Yu.F., red.

[Machine parts] Detali mashin. Izd.2. Moskva, Vysshaia  
shkola, 1964. 347 p. (MIRA 17:12)

SOV/138-58-10-6/10

AUTHORS: Gul', V. Ye., ~~Vil'nits, S. A.~~ Gel'perin, N. I; Il'in, N. S.;  
Kaplunov, Ya. N; Tsarskiy, L. N. and Krasikova, G. Z.

TITLE: Investigation of the Possibility of Pulverizing Chilled  
Rubber (Razrabotka sposoba izmel'cheniya okhlazhdennykh  
rezin)

PERIODICAL: Kauchuk i Rezina, 1958, Nr 10, pp 22 - 28 (USSR)

ABSTRACT: Much rubber scrap is not re-used because of the difficulty of pulverizing the material. This difficulty can be overcome by chilling the rubber. The authors first review the changes in physical and mechanical properties of rubber at low temperature. Fig.1 shows maximum speed of rupture (mm/sec) against temperature for a vulcanized mixture of SKB and natural rubber. Fig.2 shows the same for SKB (Butyl) rubber. Each figure shows curves for three different rates of deformation. The maximum speed of rupture is that which occurs immediately before the specimen parts. The re-orientation of material at the point where rupture commences was studied by scribing a line across the specimens, and comparing the thickness of the line where rupture commences with the thickness of the line in the unruptured part of the stretched specimen. In Fig.4 these relative thicknesses are plot-

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## Investigation of the Possibility of Pulverizing Chilled Rubber

ted against time for specimens of SKB and natural rubber at four different temperatures. The specimens were deformed at a rate of 500 mm/min. At  $-53^{\circ}\text{C}$  no re-orientation at the rupture point occurs. Fig.5 shows stress versus relative elongation for the same rubber mix at different temperatures. Fig.6a shows the relative elongation versus temperature, and Fig.6b the stress versus temperature at the moment of rupture, in each case for three different rates of deformation. In Fig.7 the work of deformation ( $\text{kg}/\text{cm}^3$ ) is plotted against temperature for SKB-50 and the same in Fig.8 for SKB-50 plus natural rubber. By comparing Figs. 2, 6 and 7 one sees that the temperature for maximum work of deformation to rupture corresponds to that for minimum speed of rupture and for maximum relative elongation at rupture. At low temperatures the low mobility of the molecular structure prevents re-orientation at the point of rupture as is seen in Fig.4; the resistance to rupture and relative elongation decrease and the speed of rupture increases. Fig.9 shows stress versus relative elongation for samples of rubber and fabric, cut from a tyre casing, at three different rates of deformation for four temperatures. These follow

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the same form as the plain rubber specimens in Fig.5.

In order to obtain a brittle state when pulverizing rubber and fabric materials the temperature must be lowered and the speed of pulverization or rupture must be increased. The apparatus shown in Fig.10 was constructed to determine optimum speed of deformation for pulverization. Specimens 10 - 20 mm wide and 1 - 6 mm thick are clamped to the periphery of a 200 mm disc which can be rotated at various speeds. The disc runs in an insulated tank. The specimens strike against a pin mounted on a spring, so that the force acting on the pin can be measured dynamometrically, and the energy of deformation in fracturing the specimens can be calculated. Optimum speed was found to be in the region of 3000 r.p.m. From the parameters established, the hammer-mill type of pulverizer, shown in Fig.11, was constructed. The gap between the hammers and the saw-toothed periphery of the mill casing is 1.5 - 2 mm. The mill runs at 3000 r.p.m. The mill is fed with pieces of rubber about 40 x 20 x 8 mm previously cooled in a dry ice and alcohol mixture. Pulverized material discharged through the grating at the

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base of the mill was subjected to sieve analysis. Energy input was measured by a recording wattmeter. Table 1 shows results with this pulverizer for various rubber and rubber fabric materials. The size of the openings in the discharge grating was either 5 mm or 2 mm. Material was cooled to temperatures of  $-66^{\circ}$ ,  $-60^{\circ}$  and  $-50^{\circ}\text{C}$ . Time and k.w.h. to pulverize 400 gramme quantities of material are given, and the specific energy requirement in k.w.h. per metric ton of material is given in the last column. Table 2 gives the sieve analysis for the various samples for 5 mm and for 2 mm openings in the discharge grating. To complete the calculation for energy requirements, the power in k.w.h. required to cool one ton of material to temperatures between  $5^{\circ}\text{C}$  and  $-55^{\circ}\text{C}$  are given. These calculations are based on an initial temperature of  $20^{\circ}\text{C}$ ., specific heat of material 0.5 c.cal/kg $^{\circ}\text{C}$ , and 59.5% cooling efficiency from a Freon 12-refrigeration circuit as

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Investigation of the Possibility of Pulverizing Chilled Rubber

in Fig.12 with a further 20% loss to air allowed for.  
There are 12 Figures, 2 Tables and 7 Soviet References

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii  
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Chemical Technology imeni M.V. Lomonosov)

Card 5/5

POZIN, M.Ye.; KOPYLEV, B.A.; SEYTMAGZIMOV, A.; VIL'NITS, Ye.L.

Rate of decomposition of Kara-Tau phosphorites treated by the  
chamberless process (in nonthickening pulps). Zhur. prikl. khim.  
34 no.2:259-265 F '61. (MIRA 14:2)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета.  
(Phosphorites)



AL', G.E., doktor med.nauk; AMOSOV, N.M., prof.; ANTELAVA, N.V., prof.;  
BOGUSH, L.K., prof.; VOZHESENSKIY, A.N., prof.; VIL'NIANSKIY,  
L.I., kand.med.nauk; LAPINA, A.A., prof.; MASSINO, S.V., doktor  
med.nauk; MIKHAYLOV, F.A., prof.; RABUKHIN, A.Ye., prof.;  
KHRUSHCHOVA, T.N., prof.; SHAKLEIN, I.A., prof.; YABLOKOV, D.D.,  
prof.; EYNIS, V.L., prof., zasluzhennyy deyatel' nauki, otv.red.;  
KORNEV, P.G., prof., red.; KUDRYAVTSEVA, A.I., prof., red.  
[deceased]; LAPINA, A.I., red.; LEBEDEVA, Z.A., kand.med.nauk,  
red.; STRUKOV, A.I., prof., red.; SHEBANOV, F.V., prof., zasluzhennyy  
deyatel' nauki, red.toma; GRINSHPUNT, Ye.M., red.; LYUD-  
KOVSKAYA, N.I., tekhn.red.

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(TUBERCULOSIS)

BELOZOROV, P.T.; VIL'NYANS'KIY, L.I.

Experimental tuberculosis in white rats with alloxan diabetes.  
Medych.zhur.24 no.4:27-34 '54. (MLRA 8:10)

1. Ukrains'kiy naukovo-doslidniy tuberkul'ozniy institut  
(m.Kharkiv)

(DIABETES MELLITUS, experimental,  
with tuberc. in white rats)

(TUBERCULOSIS, experimental,  
with alloxan diabetes in white rats)

VIL'NYANSKIY, L.I. (Khar'kov)

Some clinical aspects of tuberculosis in diabetes mellitus. Probl.  
endok. i gorm. 2 no.3:64-68 My-Je '56. (MLRA 9:10)

1. Iz Ukraineskogo instituta tuberkuleza (dir. - dotsent N.M.Yanov)  
i klinicheskogo otdela (rukovoditel' - prof. M.A.Kipalovich)  
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(DIABETES MELLITUS, compl,

tuberc., pulm., role of low resist. i diabetes, diag. &  
ther.)

(TUBERCULOSIS, PULMONARY, etiol. and compl.

diabetes mellitus, role of low resist. in diabetes,  
diag. & ther.)

EXCERPTA MEDICA Soc.15 Vol.10/5 Chest Diseases May57

1373. VILNANSKY L.I. Ukrainian Inst. of Tuberc. and Clin. Sect., Ukrainian Inst. of Exp. Endocrinol., Kharkov, USSR. \*Some peculiarities in the clinical course of tuberculosis in patients with diabetes mellitus (Russian text) PROBL. ENDOKRINOL. GORMONOTERAPII 1956, 2/3 (64-68)

The symptomatology of the infiltrative form of tb in diabetes mellitus shows some peculiarities: a more protracted course with little or no symptoms, less pronounced febrile reactions, a rare onset in form of a grippe, and difficulties in finding tb bacilli in the sputum. The subjective picture is at first reminiscent of diabetes mellitus manifestations. These peculiarities impose the necessity of systematic roentgenological investigations in all patients with diabetes mel. to reveal the tb in time. The correct treatment of diabetes mel., the early discovery of tb and the timely combined treatment with the antibacterial preparations (streptomycin, phthivaside) and, where indicated, with artificial pneumothorax and correcting operations, considerably improve the prognosis, lessen the frequency of progressive forms of tb in such patients and not infrequently achieve a complete cure.

Krimsky - Moscow (XV, 6)

VIL'NITSKIY, Moisey Borisovich [Vil'nyts'kyi, M.B.], kand. filos. nauk;  
VASILETS', I.P. [Vasylets', I.P.], red.; MATVIICHUK, O.A.,  
tekhn. red.

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(Relativity (Physics))

S/080/61/034/001/007/020  
A057/A129

5 2200 1087, 1043, 1155

AUTHORS: Bezukladnikov, A.B., Vil'nyanskiy, Ya.Ye.

TITLE: Effect of the Chlorides of Iron and Aluminum on the Chlorination  
Rate of Titanium Dioxide

PERIODICAL: Zhurnal Prikladnoy Khimii, 1961, Vol. 34, No. 1, pp. 49-53

TEXT: Chlorination of titanium-bearing slags in molten chlorides (carnallite) is currently being introduced into industry. Amongst other questions the effect of iron and aluminum chlorides on the chlorination kinetics of titanium oxides is important. This question was investigated in the present paper and the results of laboratory experiments are presented. Chlorination was carried out with 100% chlorine gas at 500°-900°C. 150 g carnallite (0.20% Mg, 0.0005% Fe and 0.001% TiO<sub>2</sub>) was mixed in a quartz tube with 1.6 g dried petroleum coke and melted at 700°C during 1 hr, introducing chlorine gas at a rate of 4.5 l/hr. Then a dried mixture containing 1.6 g TiO<sub>2</sub> and 0.4 g coke were added after adjusting the heating to the temperature of the experiment. TiCl<sub>4</sub> evolved was absorbed in diluted H<sub>2</sub>SO<sub>4</sub>. The chlorination

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Effect of the Chlorides of Iron and Aluminum on the Chlorination Rate of Titanium Dioxide

kinetics was investigated without additions of  $\text{FeCl}_3$  or  $\text{AlCl}_3$ . Reaction between the latter and suspended  $\text{TiO}_2$  particles was studied by chlorination of molten carnallite (containing 2 g coke) during 1.5 hr at  $750^\circ\text{C}$ . After this period carnallite melt containing  $\text{FeCl}_3$  (10 g) or  $\text{AlCl}_3$  (24.6 g) was added, and after 10-15 min the first sample was taken. Then 3 g  $\text{TiO}_2$  and 1 g coke was added and 3 g samples of the melt were periodically analyzed. The obtained results demonstrate (Fig.2) that in the first 15 min at low temperatures ( $500^\circ$  and  $600^\circ\text{C}$ ) the chlorination rate is high. This stage of chlorination was not taken into account in calculations of the medium chlorination rate (Fig.3). The results indicate that chlorination rate in the molten carnallite depends on the temperature of the bath. According to the slope of the curve 1 in Fig.3 the authors assume that chlorination at the investigated temperatures occurs in the kinetic range. Dependence of the chlorination rate constant on temperature is given by:  $\log K = 4.114 - 11,200/4.574T$  ( $11,200$  = apparent activation energy). The results obtained for the chlorination of  $\text{TiO}_2$  with  $\text{FeCl}_3$  and  $\text{AlCl}_3$  admixtures (Fig.4 and 5) demonstrate

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# Effect of the Chlorides of Iron and Aluminum on the Chlorination Rate of Titanium Dioxide

that the chlorination rate increases with the concentration of these admixtures. A considerable increase in the  $\text{FeCl}_3$  and  $\text{AlCl}_3$  content at the end of reaction indicates that exchange reaction according to E.I. Krech [Ref.1: ZhOKh, VII, 8, 1249 (1937)] may occur. Experiments on the chemism of the reaction show (Fig.6) that at a concentration of 0.4%  $\text{TiO}_2$  practically all ferrous chloride changes into ferri chloride. With decreasing  $\text{TiO}_2$  the  $\text{FeCl}_3$  content increases. Apparently the following reaction takes place:  

$$4 \text{FeCl}_3 + \text{TiO}_2 + \text{C} \longrightarrow \text{TiCl}_4 + 4 \text{FeCl}_2 + \text{CO}_2, 2 \text{FeCl}_2 + \text{Cl}_2 \longrightarrow 2 \text{FeCl}_3.$$
 Exchange reaction with  $\text{AlCl}_3$  (Fig.7) occurs until  $\text{Al}_2\text{O}_3$  is formed. With decreasing  $\text{TiO}_2$  concentration the content of  $\text{AlCl}_3$  increases due to the chlorination of  $\text{Al}_2\text{O}_3$ . Thus  $\text{AlCl}_3$  and  $\text{FeCl}_3$  are catalysts for the  $\text{TiO}_2$  chlorination. Catalysis of iron compounds in chlorination of oxides was observed already by Ashcroft [Ref.2: V.M. Gus'kov, Sistematischeskoye sobraniye patentov (Systematic Collection of Patents) GONTI (1938)]. Chlorinations of  $\text{TiO}_2$  in carnallite melt at  $500^\circ\text{--}900^\circ\text{C}$  with 2%  $\text{FeCl}_3$  demonstrated (Fig.3, curve 2) that at  $680^\circ\text{C}$  chlorination changes from the kinetic to the diffusion range  
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Effect of the Chlorides of Iron and Aluminum on the Chlorination Rate of Titanium Dioxide

and the apparent activation energy decreases from 7,340 cal to 770 cal. The obtained results indicate that above 680°C intensification of mixing of the melt is advantageous since a better mass exchange takes place. The chlorination rate can be increased not as much by raising the temperature, but by increasing the content of  $\text{FeCl}_3$  or  $\text{AlCl}_3$  in the melt. There are 7 figures and 2 references: 2 Soviet-bloc.

ASSOCIATIONS: Bereznikovskiy filial VAMI (Berezniki branch of the All-Union Aluminum and Magnesium Institute) and Ural'skiy politekhnicheskii institut (Ural Polytechnical Institute)

SUBMITTED: February 24, 1960

Card 4/10

VILNER, L.M.

Use of chick embryos as experimental models studying the immunogenic and virulent properties of Salmonella typhi. Zhur. mikrobiol. epid. i immyn. 29 no.10:133-137 O '58. (MIRA 11:12)

1. Iz Gosudarstvennogo kontrol'nogo instituta syvorotok i vaktsin imeni Tarasevicha.

(SALMONELLA TYPHOSA,

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VIL'FINA, M.A.; ORLOV, I.M., mladshiy nauchnyy sotrudnik.

Improve the quality of wool sorting. Tekst. prom. 18 no.8:32-34  
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VIL'NITSKIY, M.B. [Vil'nits'kiy, M.B.], kand.filos.nauk; DYSHLEVYI, P.,  
kand.filos.nauk

Lenin and natural science. Nauka i zhyttia 8 no.4:1-4 Ap '58.  
(Lenin, Vladimir Il'ich, 1870-1924)  
(Science)